

IN THE CLAIMS:

A complete listing of the claims and their status as of this Amendment is as follows:

Claim 1 (currently amended): A method Method of forming high-molecular polymers starting from gel-forming water-insoluble polymers, in particular polymers of the acrylic type, including comprising the steps of:

- a): dissolving an amount of at least one initiator-modifier compound of the general formula of one of EHaO, EHaO₂, EHaO₃ or EHaO₄, wherein E comprises one of hydrogen, an alkali metal or an alkali earth metal and Ha comprises halogen, in an aqueous solution at a starting temperature;
- b): adding a gel-forming water insoluble polymer to the solution and mixing it therewith to form macro-aggregates from the polymers; and finally
- c): modifying the macroaggregates macro-aggregates by at least one of heating and or by irradiation to form water-soluble high-molecular polymers.

Claim 2 (currently amended): Method The method of claim 1, wherein for the modification modification of the macro-aggregates further comprises increasing the temperature of the solution is increased steadily or in intervals from the starting temperature to an elevated aging temperature for a pre-determined time period.

Claim 3 (currently amended): Method The method of claim 1-or-2, further comprising the step of adding a reducing agent to the solution for the removal of excess initiator-modifier compound.

Claim 4 (canceled):

Claim 5 (currently amended): ~~Method~~ The method of claim 1 according to any of claims 1 to 4, further comprising selecting wherein the initiator-modifier compound is from the group comprising at least one of CaOCl₂, ozone, peroxide compounds E₂O₂ (E₂O₂): and/or and ammonium peroxy sulphate.

Claim 6 (currently amended): ~~Method~~ The method of claim 1 according to any of claims 1 to 5, further comprising generating wherein the initiator-modifier compound is generated 'in situ' by adding precursor compounds or educts for forming 'in situ' substances of the general formula of one of the group comprising EHaO, EhaO₂, EhaO₃ or EhaO₄ wherein:

E comprises one of is hydrogen, or an alkali metal or an alkali earth metal;
and

Ha comprises is halogen.

Claim 7 (currently amended): ~~Method~~ The method of claim 1 according to any of claims 1 to 6, further comprising determining wherein the concentration of the initiator-modifier compound is determined according to active oxygen.

Claim 8 (currently amended): ~~Method according to~~ The method of claim 7, further comprising preparing wherein the concentration-(by weight): of the initiator-modifier

compound is to be between 0,05–20,0% 0.05 and 20.0% of the polymer mass to be modified.

Claim 9 (currently amended): Method The method of claim 7 according to any of claims 7 or 8, further comprising preparing wherein the concentration of the initiator-modifier compound is to be between 0.1 and 10%, preferably between 0.3 and 5%, and most preferably between 0.5 and 1.0% of the polymer mass to be modified.

Claim 10 (currently amended): Method The method of claim 1 according to any of claims 1 to 9, further comprising adding wherein the polymer to be modified is in solid form.

Claim 11 (currently amended): Method The method of claim 10 according to claim 10, further comprising adding wherein the polymer is added to the reaction solution in a granulated form.

Claim 12 (currently amended): Method The method of claim 11 according to claim 11, further comprising selecting the polymer wherein the granulates is composed of particles with a mean diameter of maximum 400 µm, preferably maximum 200 µm, and most preferably maximum 150 µm.

Claim 13 (currently amended): Method The method of claim 1 according to one of the claims 1 to 12, further comprising adding an wherein the amount of the an

alkaline compound for forming the an alkaline solution that is less than 10% per weight, preferably less than 2%, and most preferably less than 1% per weight.

Claim 14 (currently amended): Method The method of claim 1 according to one of the claims 1 to 13, further comprising allowing wherein the dissolution of the initiator-modifier compound occurs in a temperature range between 0 and 50 °C, preferably 10 and 40 °C, and most preferably between 15 and 25 °C.

Claim 15 (currently amended): Method The method of claim 1 according to one of the claims 1 to 14, further comprising adding wherein the adding of the polymer is accomplished within 20 minutes, preferably within 15 minutes and most preferably within 10 minutes.

Claim 16 (currently amended): Method The method of claim 1 according to one of the claims 1 to 15, further comprising selecting wherein the polymers to be modified are as hydrophilic superabsorbents, preferably on the a base of an acrylic acid.

Claim 17 (currently amended): Method The method of claim 1 according to one of the claims 1 to 16, further comprising selecting wherein the concentration of polymer in the a reaction mixture is to be between 0,1% 0.1% and 50,0% 50.0% per weight, preferably between 3% and 15%, and most preferably between 5 and 10% per weight.

Claim 18 (currently amended): ~~Method~~ The method of claim 1 according to one of the claims 1 to 17, further comprising maintaining ~~wherein~~ the pH of the reaction solution is kept between 5 and 14 and preferably between 7 and 12.

Claim 19 (currently amended): ~~Method~~ The method of claim 1 according to one of the claims 1 to 18, further comprising aging ~~wherein~~ the resulting reaction is aged at an aging temperature of 20 to 50 °C for at least 1 hour, preferably for at least 3 hours, and most preferably for at least 10 hours.

Claim 20 (currently amended): ~~Method~~ The method of claim 1 according to one of the claims 1 to 19, further comprising irradiating ~~wherein~~ the reaction mixture is irradiated by electromagnetic radiation comprising at least one of, preferably daylight, UV-light, penetrating (γ): and/or and X-ray radiation.

Claim 21 (currently amended): ~~Method~~ The method of claim 1 according to one of the claims 1 to 19, further comprising agitating or stirring ~~wherein~~ the reaction mixture is agitated or stirred vigorously during and after the addition of the gel-forming water insoluble polymer.

Claim 22 (currently amended): A high ~~High~~ molecular mass acrylic polymer obtainable according to one of the claims 1 to 21. formed by the steps comprising: dissolving an amount of at least one initiator-modifier compound of the general formula of one of EH_aO, EH_aO₂, EH_aO₃ or EH_aO₄, wherein E comprises

one of hydrogen, an alkali metal or an alkali earth metal and Ha comprises halogen,
in an aqueous solution at a starting temperature;
adding a gel-forming water insoluble polymer to the solution and mixing it
therewith to form macro-aggregates from the polymers; and
modifying the macro-aggregates by at least one of heating and irradiation to
form water-soluble high-molecular polymers.

Claim 23 (currently amended): The acrylic Acrylic polymer of according to claim 22,
wherein the average molecular weight is between 0.2×10^6 and 15×10^6 a.u.

Claim 24 (currently amended): The acrylic Acrylic polymer of according to claim 22
~~or 23~~, wherein the polymer is water soluble.

Claim 25 (new): The acrylic polymer of claim 22, further comprising a reducing agent for removing excess initiator-modifier compound.

Claim 26 (new): The acrylic polymer of claim 22, wherein the initiator-modifier compound is selected from the group comprising at least one of CaOCl_2 , ozone, peroxide compounds E_2O_2 (E_2O_2); and ammonium peroxysulphate.

Claim 27 (new): The acrylic polymer of claim 22, wherein the concentration of the initiator-modifier compound is determined according to active oxygen.

Claim 28 (new): The acrylic polymer of claim 22, wherein the concentration by weight of the initiator-modifier compound is approximately between 0.05 and 20.0% of the polymer mass to be modified.

Claim 29 (new): The acrylic polymer of claim 22, wherein the polymer is comprised of particles with a mean diameter maximum of approximately 400 μm .

Claim 30 (new): The acrylic polymer of claim 22, wherein an amount of an alkaline compound for forming an alkaline solution is less than 10% per weight.

Claim 31 (new): The acrylic polymer of claim 22, wherein the polymers to be modified are hydrophilic superabsorbents.

Claim 32 (new): The acrylic polymer of claim 22, wherein the concentration of polymer in a reaction mixture is between approximately 0.1% and 50.0% per weight.